Amendments to the Drawings:

The attached sheets of drawings include changes to Figures 1-10. These sheets replace all of the original Figures. The figures have been formalized as requested by replacement of the hand written "Fig." designation and the reference numbers. Formal drawings are submitted herewith under separate Letter to the Draftsperson which incorporate the changes required by the Examiner. Approval by the Examiner is respectfully requested.

Attachment: Replacement Figures 1-10

REMARKS

Claims 1-6 and 13-15 are rejected. Claims 7-12 and 16 are withdrawn from consideration. Claims 1, 5, 13 and 14 have been amended. Claims 1-6 and 13-15 are presently pending in the application.

The basis for the amendment of claims 1 and 13 is found on pg. 4, lines 15-17 (flexible transparent substrate); pg. 4, line 22 (first patterned conductors formed over substrate); pg. 4, lines 23-24 and pg.10, lines 21-22 (transparent first conductors); pg. 5, lines 3-4 (liquid crystal layer overlaying first patterned conductor); pg. 6, lines 3-4 (second patterned conductors overlaying polymer dispersed cholesteric material); pg. 11, lines 1-2, (addressable matrix); pg. 10, lines 9 – 10, pg. 13, lines 11-13 (first patterned conductors and said second patterned conductors form an array), pg. 10, line 30 – pg.11, line 1 (row conductors); pg. 6, lines 23-25 (row conductors interconnected to second patterned conductors), pg.11, lines 9-10 (row conductors arranged to interconnect with contacts), pg. 11, lines 9-10 (contacts are also connected to first patterned conductors), and pg. 7, lines 10-13 (contacts are connected to the display to supply voltage). Additional support for the amendments may be found in Figs. 1, 7, 8, 9, and 10. Favorable reconsideration of the application in view of the following remarks is respectfully requested.

Rejection of Drawings:

The Examiner has requested new corrected drawings because the present drawings are informally labeled. The Applicant has provided the required formal drawings.

Rejection Of Claims 1-6 and 13-15 Under 35 U.S.C. §103(a):

The Examiner has rejected Claims 1-6 and 13-15 under 35 U.S.C. 103(a) as being unpatentable over Hasegawa (U.S. Patent No. 5,055,662) in view of Yang et al. (U.S. Patent No. 6,061,107, from hereinafter "Yang") and Hara (U.S. Patent No. 4,797,542). The Examiner indicates that, as to claims 1 and 13, Hasegawa discloses a transaction card and method of making a transaction card having a card body, machine readable information on the card body), a flexible display (fig. 1, ref. 2) affixed to the card body for displaying information related to the machine readable information, and an array of conductors, or contacts, connected to the display for applying selected voltages from an external display driver that changes the state of the display, and, although the reference teaches a

display having a polymer-dispersed cholesteric liquid crystal material having a first planar reflective state and a second transparent focal conic state, which is responsive to an applied voltage to display information until the voltage is removed, Hasegawa does not specifically disclose a display that is pressure-insensitive and does not disclose a patterned conductors. The Examiner further indicates that Yang discloses a bistable polymer dispersed cholesteric liquid crystal display (LCD) that is insensitive to pressure and Hara discloses discloses a transaction card with an LCD display having patterned conductors that are a printed carbon (fig. 8, ref. 23; col. 4, lines 1-6) and, therefore, it would have been obvious to one of ordinary skill at the time the invention was made to have formed a transaction card with a pressure-insensitive display since one would be motivated to provide versatility (col. 5, lines 1-6), such as different pitches in different regions to make, for example, a multi-color display, self-adhesion, that reduces bulkiness, and protection.

Hasegawa discloses a portable prepaid card comprising a substrate bearing a photoconductive layer, a liquid crystal layer, and a continuous transparent electrode plate, in this order. When an optical image is radiated on the photoconductive layer through the liquid crystal layer, the regions exposed to the light and the unexposed regions of the photoconductive layer have different volume resistances. In this state, if a predetermined voltage is applied from the outside between the electrode plate and the photoconductive layer, a visible image corresponding to the radiated optical image is fixed in the liquid crystal layer. The resulting card allows ease of writing or erasing information and provides a visible information display section which both the user and the card handling machine can easily read to learn the correct balance on the card. Hasegawa fails to disclose an array of patterned conductors, one on each side of the liquid crystal layer, which produces a matrix addressable display. Hasegawa also fails to disclose a pressure-insensitive liquid crystal material to avoid damage to the display as a result of flexing of the substrate bearing the layers.

Yang discloses polymer/cholesteric liquid crystal dispersions in which the liquid crystal phases are separated from the polymer matrix to form droplets. The cholesteric liquid crystals, which are positive dielectric anisotropic, are bistable at a zero field condition, that is, the liquid crystal can be in either the reflecting planar state or the scattering focal conic state. These dispersions may

be used to produce multicolor reflective cholesteric displays and prevent inter-pixel diffusion of the cholesteric liquid crystals. Yang fails to teach or disclose patterned conductive layers, matrix addressable displays, fails to mention anything relating to use of pressure-insensitive liquid crystal materials in transaction cards, and fails to mention use of a pressure-insensitive liquid crystal material to avoid damage to the display of a flexible transaction card.

Hara discloses an electronic apparatus including a plurality of external contacts and input terminals, a memory for storing application data, a designating unit for designating the application as stored in the memory, and a display unit for displaying the designated application data. When a power control key provided on the side of a card apparatus is in an on state, the application can be changed to another application by the designating unit. The applications as designated are successively displayed by the display unit. Through this display, the application to be used at any given time can be specified. Hara includes a liquid crystal display in the apparatus, but teaches nothing about the structure and composition of the liquid crystal display. Hara fails to teach or disclose a flexible, matrix addressable liquid crystal display. Hara also fails to mention conductors in the liquid crystal display and fails to mention patterned conductive layers on each side of the liquid crystal layer.

The present invention, as amended, relates to a transaction card having machine readable information and a visible display comprising a card body, machine readable information on the card body, and a flexible matrix addressable display including a pressure-insensitive polymer-dispersed cholesteric liquid crystal material affixed to the card body for displaying information related to the machine readable information. The liquid crystal layer is surrounded by 2 layers of patterned conductors, forming an array, connected to the display for applying selected voltages from an external display driver to the display to change the state of the pressure insensitive liquid crystal material. The invention provides an inexpensive means for providing machine-readable information in conjunction with an electrically updateable display, which is insensitive to pressure to avoid obscuring the data written on the display as a result of the flexing of the card.

To establish a prima facia case of obviousness under 35 U.S.C. § 103, first, there must be some suggestion or motivation, either in the references

themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references, when combined, must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the applicant's disclosure. *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998).

The references fail to provide any motivation to combine. Hasegawa fails to teach or disclose the use of pressure insensitive liquid crystal materials. Hasegawa also fails to mention a flexible display. Although the Examiner indicates such reference in Fig. 1, ref. 2, the Applicant has been unable to find any such reference and requests the Examiner to specifically indicate the reference to a flexible substrate in Hasegawa or withdraw the indicated rejection. Hasegawa also fails to disclose patterned conductors adjacent to both sides of the liquid crystalline layer as presently claimed. In addition Hasegawa fails to mention a matrix addressable display in which readable information is displayed through the pixels formed in the display by selectively activating regions of the liquid crystal material through the use of patterned fields produced by the patterned conductors. Instead, Hasegawa provides an extra layer, which is a photosensitive layer, adjacent to the liquid crystal layer, that modulates the amount of voltage applied to the liquid crystalline material to produce a pattern. Yang fails to teach anything regarding the use of pressure insensitive cholesteric liquid crystal material in portable cards, teaching instead use in "large area displays" (col. 6, lines 17-18), self-adhesion (col. 6, lines 18-22), and use in multicolor displays by control of pitches in different regions of the liquid crystal dispersion (col. 6, lines 24-25). Yang also fails to mention patterning the conductors surrounding the liquid crystalline layer to form a matrix addressable display. Yang further fails to mention flexible substrates. Hara fails to disclose the use of a pressure-sensitive liquid crystalline material in combination with a flexible substrate. In fact, Hara (col 3, lines 43-45) indicates a stainless steel plate is used in the invention to "ensure the strength of the lower section", teaching away from a flexible apparatus. In addition, Hara fails to teach the use of patterned conductors on each side of the liquid crystalline material to produce a matrix addressable display, which are in contact with row conductors connect to

contacts for supplying voltage. Hara (col. 5, line 14-19, cited by the Examiner) refers to two pairs of movable key contacts formed onto the upper surface of a sub-wiring board so that they will face the key display printing section of upper surface sheet and make contact with and key contacts to make up the application select key input section and history call-up section of the apparatus. These contacts are in no proximity to the liquid crystal display as can be easily seen from Fig. 1, in which the display portion of the apparatus is identified as 4 or 4a and the key contact portion of the device is identified as 2 or 2a, 3 or 3a. This lack of proximity can also be seen from Fig. 3, liquid crystal display 40 and wiring board unit 20. In summary, none of the references, alone or in combination, teach, disclose, or suggest the use of pressure insensitive liquid crystal materials to produce a portable, flexible, matrix addressable card, which resists the deleterious effects on the card display, caused by the flexing of the transaction card.

As previously mentioned, the Applicant is still unable to locate any reference to versatility in col. 5, lines 1-6 or reductions in bulkiness and protection (col. 6, lines 15-18) as depended upon by the Examiner in his rejection. It should also be noted that a versatile card is not necessarily a flexible card, but may mean a limitless number of things. The Applicants respectfully request that the Examiner provide the location of the information or kindly withdraw the rejection.

The references fail to provide any likelihood of success. As mentioned above, none of the references teach, disclose, or suggest the use of pressure insensitive liquid crystal materials to produce a portable, flexible card, which resists the deleterious effects on the card display caused by the flexing of the thin transaction card, and which display is matrix addressable. There are a very large number of compounds and methods known to those skilled in the art which may be utilized to produce displays on substrates and the decision of which to use depends on many different factors. Liquid crystal displays are complex and unpredictable and the fact that two technologies are independently successful does not indicate that the combination will be useful or beneficial, especially in light of the fact that neither reference mentions the problem solved by the present invention. The fact that the art contains technology for making liquid crystal displays and technology on making pressure insensitive liquid crystalline

materials, does not make it likely that a combination of the two technologies will be successful. Further, the art does not teach that an array of patterned conductive layers on either side of a liquid crystalline is likely to successfully produce a matris addressable display. At most, the Examiner has set forth an argument that it would be "obvious to try" the combination pressure insensitive liquid crystalline material in a liquid crystal disply, as disclosed in the cited references. Therefore, there is no reasonable expectation of success found in any combination of the cited references. It is only in hindsight and with the teachings of Applicant's invention that the Examiner has concluded that the combination of pressure insensitive liquid crystal materials, surrounded by an array of patterned conductors with a specifically configured transaction card is obvious.

In addition, the references fail to include the limitations of the present claims, as amended. Neither Hara, Yang nor Hasegawa teach, disclose or suggest the use of an array of patterned conductors, in the form of a first transparent patterned conductor and a second patterned conductor surrounding the liquid crystal layer and connected to row conductors, to produce easier to manufacture and less costly transaction cards bearing a matrix addressable display. Hasegawa fails to include pressure insensitive liquid crystal materials, patterned conductive layers and flexible substrates, while Yang fails to teach the use of pressure insensitive liquid crystal material surrounded by patterned conductive layers to produce flexible, matrix addressable transaction cards and Hara fails to teach flexible, matrix addressable displays containing a pressure-sensitive liquid crystal layer surrounded by 2 layers of patterned conductors to produce a matrix addressable display.

The Examiner has indicated that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have patterned conductors since one would be motivated to corresponding with openings so that the conductors would provide reliable compatibility and input terminals for operation and function, such as memory storage application (col. 1, lines 50-65). As indicated on page 10, line 19 to page 11, line 5 and illustrated in Fig. 7, the use of the patterned conductors of the present invention is not to provide reliable compatibility and input terminals for operation and function, but to to provide matrix addressability capable of creating "pixels", areas of the liquid crystalline layer that are in a different state than other areas, to produce visually readable

information. The present patterned conductors surround the liquid crystal layer and are utilized to produce a patterned field which produces a corresponding patterned state change in the liquid crystal layer. The conductors described in Hara correspond to the contacts of the present invention. The contacts of the present invention cannot be used to produce a patterned phase change in the liquid crystal material, but are used to connect the power source to the patterned conductive layers – as are the input terminal conductors of Hara.

At best, a combination of the three references produces a display with a pressure-sensitive liquid crystalline material and a photosensitive layer with a continuous conductive layer which may be connected to a voltage source through the key contacts or input terminal conductors utilized in standard circuit boards.

Since neither Yang, Hara nor Hasegawa, alone or in combination, provide the motivation, likelihood of success or claim limitations necessary to establish a prima facia case of obviousness, the Applicant requests that the Examiner reconsider the rejection of Claims 1 and 13.

Regardinq claims 2, 3, 4, 14 and 15, these claims benefit from dependence on claims 1 and 13, which Applicant believes is patentable as discussed above.

Rejection Of Claims 4, 14 and 15 Under 35 U.S.C. §103(a):

Regarding claims 4, 14, and 15, the Examiner indicates that Hasegawa discloses a transaction card made with a cholesteric liquid crystal material as recited above following the steps of providing the liquid crystal layer, providing a substrate having a first conductor (fig. 3, ref. 16b), coating the dispersion on the substrate (fig. 3, ref. 15), and printing the conductors, or contact circuits (fig. 3, ref. 6) on to the coated dispersion. The Examiner also indicates that the reference fails to specifically disclose a polymer ratio that renders the composition pressure-insensitive, and the reference fails to specifically disclose dispersing the liquid crystal in an aqueous gelatin solution and including the step of drying the dispersion after coating, but Yang discloses a bistable polymer dispersed cholesteric liquid crystal display (LCD) that is made insensitive to pressure (col. 6, lines 15-18) by dispersing the liquid crystal in an aqueous gelatin solution and including the step of drying the dispersion after coating (col. 2, lines 54-64). The Examiner indicates it would have been obvious to one of ordinary

skill at the time the invention was made to have formed a transaction card with a pressure-insensitive display since one would be motivated to provide versatility (col. 5, lines 1-6), such as different pitches in different regions to make, for example, a multi-color display, self-adhesion (col. 6, lines 18-22), that reduces bulkiness, and protection (col. 6, lines 15-18).

The Applicant believes, as discussed above that claims 1 and 13 are unobvious in light of the cited references. Claims 4, 14, and 15 benefit from dependence on Claims 1 and 13. In addition, neither reference teaches coating a conductive layer. Although the Examiner indicates that Hasegawa makes such a disclosure in Fig 3, ref. 6, col. 2, lines 45-52 of Hasegawa indicate that ref. 6 is a magnetic strip embedded in a protective layer located on the underside of the board, not a patterned conductive layer coated onto the liquid crystal layer.

Rejection Of Claim 5 Under 35 U.S.C. §103(a):

As to claim 5, the Examiner indicates that Hasegawa and Yang disclose a transaction card as recited above with conductors, and, although the references fail to specifically disclose conductors that are a printed emulsion of carbon in polymer, Hara discloses a transaction card with an LCD display having conductors that are a printed carbon (fig. 4, ref. 32a; col. 5, lines 14-19) and, therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have conductors that are a printed emulsion of carbon in polymer since one would be motivated to provide a reliable and well-known means of transmitting power to the display.

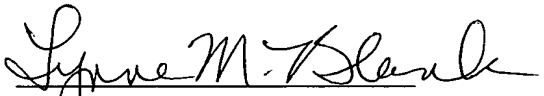
The Applicant believes, as discussed above that claims 1 and 13 are unobvious in light of the cited references. Claim 5 benefits from dependence on Claims 1 and 13. In addition, Hasegawa and Yang fail to disclose a patterned conductive layer, overlaying a liquid crystalline layer, that contains carbon in polymer. The selection of carbon in polymer is not made simply to transmit power, but also to ensure compatability in contact between the liquid crystal layer and the overlaying conductive layer to create a function and cohesive display. Neither Hasegawa not Yang disclose a conductive layer overlaying a liquid crystal layer nor a conductive layer comprising carbon in polymer.

The Examiner also, in Response to Applicant's Arguments, indicates that the main argument previously made by Applicant is that the Yang reference does not teach a pressure-insensitive material and that the conductors of

Hasegawa are not patterned. The argument previously provided indicated that, while Yang discloses a pressure insensitive liquid crystal material, Yang does not disclose "the use of pressure insensitive cholesteric liquid crystal material in portable cards." It is Applicant's opinion that just because a composition is known, new uses for the composition remain potentially patentable, especially when combined with previously undisclosed elements.

In summary, since neither Yang, Hara nor Hasegawa, alone or in combination, provide the motivation, likelihood of success or claim limitations necessary to establish a prima facia case of obviousness, the Applicant requests that the Examiner reconsider the rejection of Claims 1 and 13. It is believed that the foregoing is a complete response to the Office Action and that the claims are in condition for allowance. Favorable reconsideration and early passage to issue is therefore earnestly solicited.

Respectfully submitted,



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